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PALEONTOLOGY.—*A further contribution to the Dragon Paleocene fauna of central Utah.*¹ C. LEWIS GAZIN, U. S. National Museum.

Additional material of Paleocene Mammalia from the upper portion of the North Horn formation in central Utah was obtained by the 1938 Smithsonian Institution expedition in search of fossil vertebrates. The greater part of the collection was made from deposits of limited exposure in Dragon Canyon, in the western half of section 8, T. 19 S., R. 6 E. A few specimens were collected at a locality on the south end of Wagon Road Ridge to the west of Dragon Canyon and at a much higher elevation. The North Horn formation, together with the capping Flagstaff limestone and the older rocks, is much faulted in this region, and the Paleocene deposits in Dragon Canyon are a part of a depressed block separated by one or more north-south striking faults from the higher standing rocks of Paleocene age in the mountainous masses to the east and to the west.

The new materials collected during the 1938 season show the Dragon fauna to be more varied than had been recognized from the less extensive, though important, collection made in 1937. The specimens so far found are more fragmentary than the average of those coming from the better known deposits in the San Juan Basin and Crazy Mountain fields. In addition to crocodile and champsosaurid remains, the collection now includes material representing about 19 mammalian forms, of these 9 are recognized as new species, and three new genera are proposed. The following is a list of the Mammalia:

MULTITUBERCULATA:

Catopsalis utahensis, n. sp.
Ptilodus sp.

INSECTIVORA:

Aphronorus simpsoni Gazin
Insectivore? gen. and sp. undet.

PRIMATES?:

Primate? gen. and sp. undet.

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TAENIODONTA:

Conoryctella dragonensis, n. gen. and sp.

CARNIVORA:

Protogonodon? spiekeri Gazin*Oxyclaenus?* sp.Oxyclaenid near *Tricentes**Didymictis?* sp.

TALIGRADA:

Periptychus gilmorei Gazin*Anisonchus dracus*, n. sp.*Anisonchus onostus*, n. sp.*Haploconus inopinatus*, n. sp.

CONDYLARTHRA:

Dracoclaenus griphus, n. gen. and sp.*Ellipsodon shepherdi*, n. sp.*Ellipsodon? sternbergi*, n. sp.*Ellipsodon?* sp.*Jepsenia mantiensis*, n. gen. and sp.

Most of the above forms are rather sparsely represented, the Condylarthra including the more common forms. Material of *Ellipsodon* and of the new group *Dracoclaenus* is relatively most abundant, although that of periptychids, especially *Periptychus gilmorei*, is not uncommon.

The intermediate character of the fauna between that of the Puerco and that of the Torrejon, previously noted in the relationships of *Periptychus gilmorei* and of *Protogonodon? spiekeri*, is further indicated in the relationships of *Conoryctella dragonensis* and of *Anisonchus dracus*. These have related types in both the Puerco and Torrejon faunas. The remaining forms in the Dragon fauna either do not have comparable types in one or the other of the two San Juan horizons or the material is too fragmentary to permit more than the most casual comparisons. Five of the forms listed—*Catopsalis*, *Ptilodus*, *Aphronorus*, *Didymictis*, and *Haploconus*—suggest in name a closer approach to the Torrejon stage. Such may be the case; however, since the ancestry of these forms in the Puerco horizon is not known, the relative position in time which they suggest is doubtful. The problems of each of the forms will be discussed under their respective headings.

I wish to acknowledge the courtesy extended by Dr. Walter Granger in permitting comparisons with Paleocene materials in the American Museum of Natural History and by Dr. Glenn L. Jepsen, of Princeton University, in permitting me to examine Paleocene materials from the Big Horn Basin. The drawings illustrating certain of the Dragon specimens were made by Sydney Prentice.

SYSTEMATIC DESCRIPTION OF THE MATERIAL

MULTITUBERCULATA

Catopsalis utahensis, n. sp.

Type.—Left M_1 , U.S.N.M. no. 15757.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Cusp formula: M_1 6:4. Length of M_1 approximately 12 mm. Width 6.5 mm.

Description.—A single first lower molar is recognized as representing a taeniolabid multituberculate. The tooth exhibits the simple type of pattern seen in *Catopsalis* from the Torrejon rather than the more specialized dental structure of the Puerco *Taeniolabis*. It differs from species of *Catopsalis* known from the Torrejon of the San Juan Basin in the cusp formula of M_1 . In *Catopsalis foliatus* it is 5:4, and in *C. fissidens* the formula is 6:5 or better. Moreover, the tooth appears relatively wider than in either of the Torrejon species. *C. calgariensis* Russell from the Paskapoo was described from a second lower molar; hence no satisfactory comparison is possible.

The relative position in time of the genera *Taeniolabis* and *Catopsalis*, as pointed out by Granger and Simpson, appears paradoxical; consequently one should expect to find, eventually, other taeniolabids representing ancestral stages of *Catopsalis* in beds earlier than Torrejon. The single tooth of *C. utahensis* does not seem to present any significant evidence as to ancestral stages in the development of the genus *Catopsalis*, but appears only to extend its known geologic range to a somewhat earlier part of the Paleocene.

Ptilodus sp.

A lower jaw fragment, U.S.N.M. no. 15730, including the basal portion of the incisor and the anterior part of P_4 is considered to represent *Ptilodus*, a conclusion in which Dr. G. L. Jepsen of Princeton University concurs. The material is too incomplete to permit specific comparisons, but the specimen indicates an animal not greatly different in size from *Ptilodus mediaevus* of the Torrejon.

Material of *Ptilodus* is not known elsewhere in beds earlier than Torrejon; hence a consideration of the development of *Ptilodus* during earlier Paleocene time remains speculative and based on what is known of related types in the Cretaceous. Here again, *vide* Granger and Simpson, the position of *Ptilodus* relative to the more specialized *Eucosmodon*, known from the Puerco as well as the Torrejon, seems capricious but indicates a diversity of phyletic lines.

INSECTIVORA

Aphronorus simpsoni Gazin

Only a few fragmentary specimens of this form were obtained by the 1938 expedition. These add little or nothing to the diagnosis made in the original description. Except for a noticeably worn upper molar, tentatively referred to this form, the material consists of lower teeth or jaw portions.

Insectivore? gen. and sp. undet.

A jaw fragment with M_3 and perhaps other isolated teeth may represent one of more Insectivora other than *Aphronorus*.

PRIMATES?

Primate? gen. and sp. undet.

In a fragment of a jaw, U.S.N.M. no. 15719, a molar tooth, M_1 or M_2 , in which the crown of the trigonid is broken away, exhibits a talonid portion so closely resembling that in the Fort Union primates as to indicate strongly affinities with that group. The heel shows a wide basin with a prominent hypoconid and somewhat less important entoconid, no accessory cuspules and the posterior wall of the tooth appears only slightly convex between the two cusps. The specimen is close to *Paromomys maturus* Gidley in size but probably does not represent the same genus. The talonid portion has a width of 2 mm.

If the affinities of this very fragmentary specimen are properly understood, it represents the earliest primate known.

TAENIODONTA

Conoryctella, n. gen.

Type.—*Conoryctella dragonensis*, n. sp.

Generic characters.—Near *Conoryctes* but P^4 not molariform, tritocone (metacone) not comparable to protocone and deutocone in development, and no indication of a metaconule. Teeth less hypsodont, cusps lower, with heavy cingulum around outer cusps of upper molars. Mesostyle less prominent. Paraconid in M_1 ? unreduced in a referred specimen.

Conoryctella dragonensis, n. sp.

Fig. 1

Type.—Portion of left maxilla with P^4 to M^2 , U.S.N.M. no. 15704.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Smaller than *Conoryctes comma* but much larger than *Onychodectes tisonensis*.

Description.—The upper teeth, made the type of *Conoryctella dragonensis*, are only a little smaller than in *Conoryctes comma* but distinctly larger than in *Onychodectes tisonensis*. The Dragon form is about intermediate between these two species in degree of hypsodonty. P^4 is not so nearly molariform as in *C. comma* and has the lingual portion more compressed anteroposteriorly. The protocone and deutocone are prominent conical cusps, and the tritocone, though damaged, is seen to be but weakly developed as compared to the two other cusps. The lingual portion of this tooth does not appear crescentic; nevertheless, a low crest or cingulum extends along the posterior portion between the deutocone and tritocone.

The paracone and metacone in the first two molars, as far as preserved, are seen to be conical and low and are separated from the outer margin of the teeth by a heavy cingulum. The mesostyle, though present, is not so strongly developed as in *C. comma*. It is absent in *O. tisonensis*. The anteroexternal and posteroexternal angles of the teeth are more rounded than in *O. tisonensis* and do not exhibit styles at these points such as in the Puerco form.

The anteroposterior diameters of the upper teeth, P^4 to M^2 , are approximately 7.5, 8.2, and 7.4 mm, respectively. Any transverse measurements would be highly arbitrary.

A lower jaw fragment, U.S.N.M. no. 15722, with a molar tooth, apparently M_1 , may represent *Conoryctella dragonensis*, although it is from an individual somewhat smaller than the type. The tooth is about intermediate between *O. tisonensis* and *C. comma* in hypsodonty but apparently a little

nearer *O. tisonensis* in size. The trigonid of the tooth possesses a moderately developed paraconid situated much as in M_1 of *O. tisonensis*. The heel or talonid, though partially obscured by matrix is relatively broad, appears to be deeply basined and to have a somewhat cuspidate crest, approaching the condition seen in *C. comma*.

The Dragon lower tooth does not exhibit the basal accessory cuspule anteroexternal to the hypocone seen in *Onychodectes rarus*.

CARNIVORA

Protogonodon? spiekeri Gazin

Only a third upper molar and a portion of a lower molar of *Protogonodon spiekeri* were added to the collection by the 1938 expedition. The characters of these teeth were known from material collected in 1937; hence nothing new can be added to the diagnosis of this form.

Oxyclaenus? sp.

A lower jaw fragment, U.S.N.M. no. 15776, with M_2 and part of M_1 , resembles closely, in the characters of M_2 , a lower tooth belonging to the type *Oxyclaenus simplex* and material referred to *O. cuspidatus*. It differs from these only in having the crest connecting the paraconid and protoconid extending slightly less anteroexternally, in the absence of a very small cuspule probably unimportant, anterior to the entoconid, which tends to close the talonid basin internally in the Puerco material, and in somewhat less development of the hypoconulid. The second molar has about the proportions of the lower tooth belonging with the type of *O. simplex* and exhibits a well-marked external cingulum.

Another lower molar, no. 15784, apparently an M_1 , possibly of the same form, is distinguished by having the paraconid somewhat more median in position and lacking the external cingulum.

Oxyclaenid, near Tricentes

An isolated upper molar, U.S.N.M. no. 15783, apparently M_1 , is recognized as coming from an oxyclaenid type of creodont belonging to or near *Tricentes*. The tooth is about one-fifth smaller than in *Tricentes subtrigonus* from the Torrejon. The cusps have about the same conical appearance, and the hypocone occupies a position equivalent to that in *Tricentes*; also, the cingulum is not continuous across the buccal surface of the paracone, a condition characteristic of M^1 in *Tricentes*. However, the enamel appears less rugose than in *T. subtrigonus* and the cingulum lingually is not continuous across the protocone.

Didymictis? sp.

A fourth lower premolar, U.S.N.M. no. 15763, apparently represents the genus *Didymictis*. The tooth is only slightly smaller than in *Didymictis haydenianus* from the Torrejon but does not have the first cuspule posterior to the large cusp so distinctly set off from this primary cusp. The cuspules of the talonid are more nearly in the median line of the tooth than was observed in *D. haydenianus*. The tooth is distinctly larger than in *D. microlestes* from the Crazy Mountain locality in the Fort Union of Montana.

An isolated fourth upper premolar may possibly belong to *Didymictis* but is too small to belong to the form represented by the lower tooth. Moreover, the deuterocone portion does not extend forward so markedly as in the Torrejon material of *Didymictis*, a condition suggestive of *Ictidopappus*, but the

posterior cusp, though prominent, is not developed into so nearly a shearing blade as in either *Didymictis* or *Ictidopappus*.

TALIGRADA

Periptychus gilmorei Gazin

Several additional specimens of this large peritychid were obtained in 1938, the most significant being portions of the right and left rami of a lower jaw, U.S.N.M. no 15689, exhibiting P_4 to M_3 . This material further warrants the conclusions drawn from the upper dentitions figured in an earlier paper. The lower teeth are also nearly intermediate in most respects between *Carsioptychus coarctatus* from the Puerco and *Periptychus carinidens* of the Torrejon. The protocone of P_4 is not directed posteriorly so markedly as in *C. coarctatus*, and a small anterointernal cusp is present, this being prominent in *P. carinidens* but usually absent in *C. coarctatus*. On the posterointernal portion of the tooth there is a small cusp; the talonid, however, is not developed so much as in *P. carinidens*. The extent to which a metaconid has become distinct from the protoconid can not be exactly determined, owing to wear, but it is clearly not separated to the extent seen in *P. carinidens*.

The lower molars are wider than in the *Carsioptychus* material at hand but not so wide as is common in Torrejon material of *Periptychus*. These teeth show a slight cingulum around the external side, which was not observed in material of the other forms. The small seventh cusp located about in the center of the crown of the lower molars of *Periptychus carinidens* is not present in the first two molars of *P. gilmorei* but is weakly developed in M_3 . This cusp is not known in *Carsioptychus*.

TABLE 1.—MEASUREMENTS (IN MILLIMETERS) OF LOWER TEETH OF *Periptychus gilmorei*

	P_4	M_1	M_2	M_3
Anteroposterior diameter.....	11	10.3	10	11.5
Transverse diameter.....	9.6	8.7	9.7	9

Anisonchus dracus, n. sp.

Fig. 2

Type.—Maxillary fragment with P^4 to M^3 , U.S.N.M. no 15745.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Intermediate in position of cusps and in relative proportions of the upper cheek teeth between *Anisonchus gillianus* and *A. sectorius*.

Description.—The maxillary fragment, no. 15745, with cheek teeth P^4 to M^3 inclusive, clearly belongs to the genus *Anisonchus* and is intermediate in the observed characters between *A. gillianus* and *A. sectorius* of the Puerco and Torrejon, respectively. As has been noted in the comparisons of *Periptychus gilmorei* with comparable forms in the Puerco and Torrejon, the upper cheek teeth in the Dragon *Anisonchus* are of an intermediate character in the relation of the length to the width of the crowns.

The Dragon form approaches *A. sectorius* in size but retains relatively wider teeth transversely, and longitudinally a little shorter, and the cusp pattern is not so restricted transversely. The upper teeth appear also to have a longer, more gradually sloping lingual wall, with a somewhat more lingually placed hypocone column. The lingual portion of P^4 seems more con-

stricted anteroposteriorly and apparently has a less conspicuously developed lingual crescent.

A. gillianus has teeth relatively wide transversely, the length of the tooth

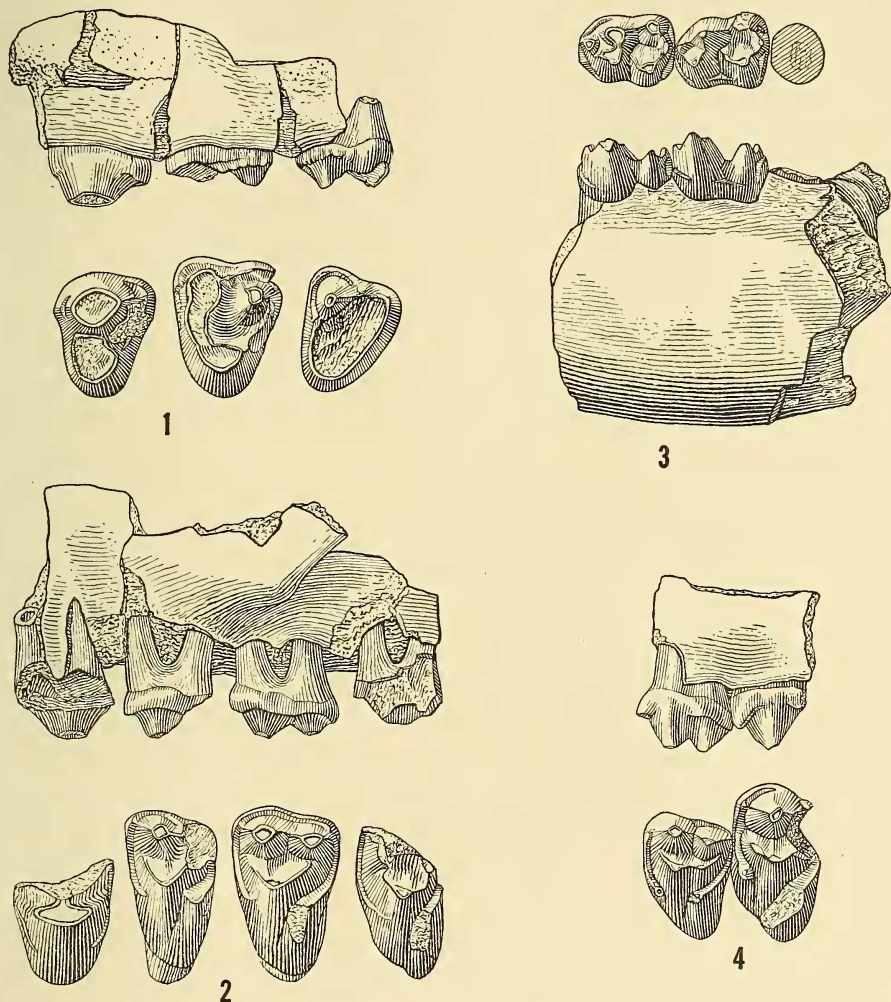


Fig. 1.—*Conoryctella dragonensis*, n. gen. and sp. Left P⁴ to M², type, U.S.N.M. no. 15704. Lateral and occlusal views. ×1.8. Fig. 2.—*Anisonchus dracus*, n. sp. Left P⁴ to M³, type, U.S.N.M. no. 15745. Lateral and occlusal views. ×3. Fig. 3.—*Anisonchus onostus*, n. sp. Left M₁ and M₂, type, U.S.N.M. no. 15788. Occlusal and lateral views. ×3. Fig. 4.—*Haploconus inopinatus*, n. sp. Left M¹ and M², type, U.S.N.M. no. 15760. Lateral and occlusal views. ×3.

row shorter, and the hypocone is placed more lingually with respect to the metacone, and to a certain extent with respect to the protocone, than in *A. sectorius*.

Two isolated jaw fragments, U.S.N.M. nos. 15715 and 15787, each with

a single molar, presumably both M_2 , are nearly equal in size to *Anisonchus sectorius* and show no significant differences from either *A. sectorius* or *A. gillianus*. However, the crest connecting the hypoconid to the trigonid appears distinctly lower than that connecting the entoconid to the metaconid. This condition was noted in an M_1 of *A. gillianus* but not in other specimens of either this species or *A. sectorius*. Moreover, the hypoconulid does not project backward in the molars referred to *Anisonchus dracus* quite so far as in M_2 of *A. sectorius*, a condition approximated in M_2 of *A. gillianus*, though possibly of doubtful significance.

TABLE 2.—MEASUREMENTS (IN MILLIMETERS) OF UPPER TEETH OF *Anisonchus dracus*

	P^4	M^1	M^2	M^3
Anteroposterior diameter.....	5?	4.4?	4.8	4?
Greatest transverse diameter.....		6.6?	7.8	

***Anisonchus onostus*, n. sp.**

Fig. 3

Type.—Left ramus of mandible with M_1 and M_2 , U.S.N.M. no 15788.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Near *Anisonchus gillianus* in size. Teeth slightly lower crowned and cusps of talonids more widely spaced.

Description.—*Anisonchus onostus* is decidedly smaller than *A. dracus*, being very near the Puerco form *A. gillianus* in size but with the cusps on the talonid of both M_1 and M_2 slightly more widely spaced, though having the cut characterizing the anisonchines. This spacing of the cusps gives the teeth a somewhat wider appearance, whereas actually they are a trifle narrower than those in several specimens of *A. gillianus* with which comparisons were made. The teeth also appear somewhat lower crowned than those of *A. gillianus* exhibiting about the same wear.

The anteroposterior diameters of the first and second lower molars are 4.3 and 4.1 mm, respectively. The transverse diameters are 2.9 and 3.2 mm.

***Haploconus inopinatus*, n. sp.**

Fig. 4

Type.—Portion of left maxilla with M^1 and M^2 , U.S.N.M. no. 15760.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Size small. Second molars much wider transversely than first molars. Protostyle prominent. Slight development of metaconule.

Description.—A second genus of anisonchine periptychids is represented by a maxillary portion with M^1 and most of M^2 . The form apparently represents *Haploconus* as indicated by the prominent lingual position of the hypocone. It appears in size to be close to the Torrejon material referred to *Haploconus angustus* but with the teeth relatively wider transversely and with M^2 relatively much wider than M^1 . A difference in width between M^1 and M^2 was noted in certain specimens of *Haploconus* referred to *H. angustus* but apparently the difference is not so marked as in *Haploconus inopinatus*.

The two upper molars show a slight development of a metaconule, but most noticeable is the distinct protostyle that characterizes teeth in *Haploconus corniculatus*. *H. inopinatus* is much smaller than the type of *H. corniculatus*, and in the latter the upper molars appear to be relatively as well as actually much longer anteroposteriorly than in the Dragon form.

The anteroposterior diameter of the first upper molar is 4.3 mm. The greatest transverse diameters of the first and second upper molars are 6.1 and 7.1 mm, respectively.

A lower jaw portion, U.S.N.M. no. 15744, with M_1 and M_2 poorly preserved, and partially obscured by ironlike matrix, appears to represent *Haploconus* in the absence of a paraconid and in the bladeliike form of the protoconid on M_1 . It corresponds closely in size to the type of *Haploconus angustus*, but with M_1 narrower, particularly the anterior portion, and M_2 wider than in the Torrejon form. This suggests that the premolars in the Dragon form may not have been so robust as in the Torrejon stage.

CONDYLARTHRA

Dracoclaenus, n. gen.

Type.—*Dracoclaenus griphus*, n. sp.

Generic characters.—Near *Protoselene*, but P^4 much more inflated and with triticocone almost indistinct. Anteroexternal and posteroexternal styles on P^4 prominent. M^1 appreciably smaller than M^2 . External cingulum on upper molars strong and mesostyle present though distinct from crest connecting paracone and metacone, paraconid on lower molars more lingual in position than in *Protoselene*, and in M_2 this cusp is less reduced and not placed so low. Talonid on lower molars somewhat shallower and narrower between hypoconid and entoconid.

Dracoclaenus griphus, n. sp.

Figs. 5-7

Type.—Fragment of right maxilla with M^1 and M^2 , U.S.N.M. no. 15789.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

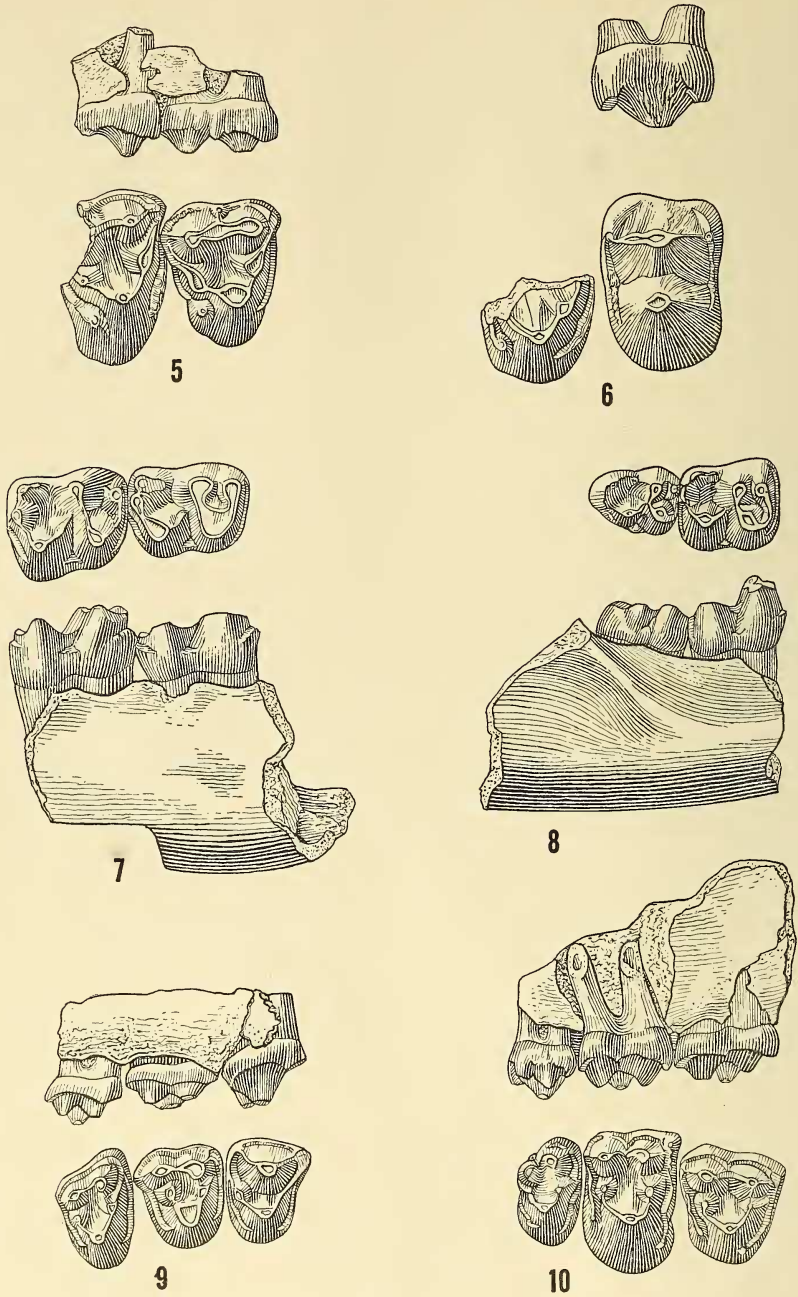
Specific characters.—Close in size to *Protoselene opisthacus*.

Description.—The material here considered to represent the new form *Dracoclaenus griphus* most closely resembles that of the Torrejon form *Protoselene opisthacus* but differs from it in several respects. A relatively large number of specimens, though fragmentary, are considered as representing this new form and three are figured and form the basis for the description.

P^4 in specimen no. 15705 is larger and more inflated than in *P. opisthacus*, approaching in this respect P^4 in *Mioclaenus turgidus*, but with less reduction of the cingulum and no metaconule such as usually present in *M. turgidus*. The triticocone of P^4 in *Dracoclaenus griphus* is almost indistinct from the protocone, whereas this tooth in *P. opisthacus* exhibits a division of the main outer cusp into a prominent protocone and a lesser triticocone placed close together. The anteroexternal and posteroexternal styles are more prominent on P^4 of the Dragon form, and a slightly better developed cingulum, though discontinuous, is indicated on the outer surface.

The upper molars, M^1 and M^2 , in no. 15789 resemble closely those in *Protoselene opisthacus*, but the difference in size between these teeth is more noticeable than in the Torrejon form. The external cingulum is more prominent and more markedly crescentic about each the paracone and metacone. The mesostyle is about as well developed as in *P. opisthacus* but distinctly separated from the crest which extends between the paracone and metacone. In *P. opisthacus* the mesostyle extends outward as a spur or projection from this crest.

Another upper dentition, including P^4 to M^2 , no. 15703, resembles the type in most characters of the molars but has a weaker hypocone on both molars and a very weak metaconule on M^2 . The anteroexternal angle of M^2



Figs. 5-10—(See opposite page for description.)

extends forward somewhat more, suggestive of the oxyclaenids, but has the mesostyle, particularly in M¹, as in no. 15789. The external cingulum is not so crescentic around the outer cusps, the outer wall being more nearly straight. P⁴ is similar but a little smaller than in nos. 15705 and 15780. This specimen, no. 15703, may represent a distinct species of *Dracoclaenus* or may possibly be of an oxyclaenid, close in size to *Oxyclaenus simplex*, however, P⁴ and M¹ more closely resemble the *Dracoclaenus* material.

The lower jaw portion, no. 15773, considered by comparison to represent *Dracoclaenus griphus*, also resembles material of *Protoselene*. It corresponds closely in size to *P. opisthacus*, but has the paraconid on M₁ and M₂ more internal in position, and in M₂ it is not placed so low and is less reduced than in *P. opisthacus*. The talonid basin is apparently not so deep and is narrower between the hypoconid and entoconid. A slight accessory cusp is present on the anterior crest of the entoconid nearly as prominent as in *P. opisthacus*.

An M₃, no. 15752, in the collection, possibly belonging to this form, does not so closely resemble *P. opisthacus*. The paraconid, though low, is placed more internal than is usual in the Torrejon form. Moreover, the entoconid is not so simple as usual in *P. opisthacus*, exhibiting three small cusps in this position, and the hypoconulid is more distinctly separated from the hypoconid.

TABLE 3.—MEASUREMENTS (IN MILLIMETERS) OF UPPER TEETH, No. 15789, AND LOWER TEETH, No. 15773, of *Dracoclaenus griphus*

	M ¹	M ²	M ₁	M ₂
Anteroposterior diameter.....	5.4		5.3	5.3
Transverse diameter.....	6.4	7.5	4	4.4

***Ellipsodon shepherdii*, n. sp.**

Figs. 8-9

Type.—Right ramus of mandible with M₂ and M₃, U.S.N.M. no. 15721.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Teeth somewhat smaller than in *Ellipsodon lemuroides* and a little larger than in *E. acolytus*. P⁴ with a metaconule, distinct from cingulum. Paraconid distinct and lingually placed in M₂ and M₃. M³ and M₃ reduced in size.

Description.—*Ellipsodon shepherdii*, as indicated by the type lower jaw, is slightly smaller than *E. lemuroides*, and the molars M₂ and M₃ are relatively narrower. M₃ is reduced to about the same extent as in *E. lemuroides*, more reduced than in the smaller forms, *E. aequidens*, *E. acolytus*, and *E. aquilonius*, but less reduced than in the Puerco species, *E. priscus*, and possibly somewhat less reduced than in the genotype, *E. inaequidens*. The paraconid of the last two lower molars is more distinct in the Dragon form than in any of the previously known species of *Ellipsodon*, much better developed

Fig. 5.—*Dracoclaenus griphus*, n. gen. and sp. Right M¹ and M², type, U.S.N.M. no. 15789. Lateral and oclusal views. ×3. Fig. 6.—*Dracoclaenus griphus*, n. gen. and sp. P⁴ and M¹ (part), U.S.N.M. no. 15705. Lateral and oclusal views. ×3. Fig. 7.—*Dracoclaenus griphus*, n. gen. and sp. Right M₁ and M₂, U.S.N.M. no. 15773. Oclusal and lateral views. ×3. Fig. 8.—*Ellipsodon shepherdii*, n. sp. Right M₂ and M₃, type, U.S.N.M. no. 15721. Oclusal and lateral views. ×3. Fig. 9.—*Ellipsodon shepherdii*, n. sp. Right P⁴ to M², U.S.N.M. no. 15790. Lateral and oclusal views. ×3. Fig. 10.—*Jepsenia mantiensis*, n. gen. and sp. Right M¹ to M³, type, U.S.N.M. no. 15747. Lateral and oclusal views. ×3.

and more lingually placed than in *E. aequidens*, but only slightly more prominent than in *E. aquilonius*. The talonids of M_2 and M_3 are more distinctly basined than in Torrejon material referred to *E. inaequidens*, but less distinctly basined than in *E. aquilonius* from Montana, also, the talonid on M_3 is better developed than in the Puerco form, *E. priscus*. Moreover, the talonid of M_2 in *E. shepherdii* does not exhibit so prominent a hypoconulid as in *E. aequidens*, but shows a more distinct entoconid than in *E. inaequidens*.

The upper teeth, P^4 to M^2 , in the maxilla, U.S.N.M. no. 15790, referred to *Ellipsodon shepherdii* are relatively smaller than in the type lower jaw and approach somewhat closer to *E. acolytus* than to *E. lemuroides* in size, however, this difference within the Dragon material may not be greater than can be accounted for by individual variation.

P^4 shows a cusp in the position that would be occupied by the metaconule in the molars. This is absent in the somewhat smaller P^4 of the Puerco form, *E. priscus*, but was observed in certain specimens of the later material. P^4 is noticeably larger than in *E. aequidens*, and M^1 and M^2 are relatively longer.

An M^3 if properly referred, indicates this tooth to be more reduced than in *E. lemuroides*, and much more reduced than in *E. acolytus*, *E. aequidens*, and *E. aquilonius*.

The upper teeth do not closely resemble those in the genotype, *E. inaequidens*. The upper teeth in the latter exhibit smooth crests running to the protocone and weak or undeveloped cingula.

TABLE 4.—MEASUREMENTS (IN MILLIMETERS) OF UPPER TEETH, No. 15790, AND LOWER TEETH, No. 15721, of *Ellipsodon shepherdii*

	P^4	M^1	M^2	M_2	M_3
Anteroposterior diameter.....	3.7	3.9	3.6	4.4	3.8
Transverse diameter.....	4.5	4.9	5.8*	4	2.9

* Greatest transverse diameter.

Ellipsodon? sternbergi, n. sp.

Type.—Fragment of right ramus of mandible with M_3 and part of M_2 , U.S.N.M. no. 15755.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—Considerably more robust than *Ellipsodon shepherdii* or *E. lemuroides* but much smaller than *Mioclaenus turgidus*. Molars simple and relatively broad. M_3 oval in shape and reduced in size.

Description.—A species nearly intermediate in size between *Ellipsodon lemuroides* and *Mioclaenus turgidus* is represented by a few fragmentary specimens, including a jaw portion with M_3 and a part of M_2 , which is made the type of *Ellipsodon sternbergi*. M_2 is much larger and broader than in other species of *Ellipsodon*; however, it apparently shows no crenulation of the crest around the posterointernal margin of the talonid as seen in many of, though not all, the lower dentitions of *M. turgidus*. The paraconid is only weakly developed on a referred M_2 , which has this portion of the tooth preserved. M_3 is only a little larger than in *Ellipsodon shepherdii* and somewhat more rounded, being nearly oval in shape. The paraconid is lacking on M_3 with only a low crest extending across the front of the tooth, connecting the protoconid and metaconid. Though reduced, the paraconid is present in all specimens of *Mioclaenus turgidus* in which M_3 was observed.

There is no certainty that this form represents the genus *Ellipsodon*, particularly since the premolars are not known. It is possible that a small species of *Mioclaenus* is represented.

The transverse diameter of the second lower molar is about 5 mm. The anteroposterior and transverse diameters of the third lower molar are 4.4 and 3.3 mm, respectively.

Ellipsodon? sp.

A lower jaw, U.S.N.M. no. 15781, is unusual in that the two teeth preserved, M_1 and M_2 , have rather blunt cusps, a flattened talonid, and a relatively undepressed area between the three cusps of the moderately elevated trigonid. It resembles somewhat specimens from the Torrejon that have been referred to *Ellipsodon inaequidens* but with the paraconid more distinctly set off, although this cusp is subdued as are the other cusps of the teeth. This may represent an unusual condition in *E. shepherdii* but probably represents a distinct form whose affinities are uncertain.

Jepsenia, n. gen.

Type.—*Jepsenia mantiensis*, n. sp.

Generic characters.—Near *Litaletes*, but lingual portion of M^2 more expanded anteroposteriorly and hypocone weaker. Cusps of molars, particularly protoconule and metaconule, more nearly conical. Paraconule and metaconule better developed. Parastyle and mesostyle developed, more noticeably on M^2 , although cingulum at anteroposterior angle of tooth not so extended. M^3 relatively smaller with less development of metacone and cingulum.

Jepsenia mantiensis, n. sp.

Fig. 10

Type.—Portion of right maxilla with M^1 to M^3 , U.S.N.M. no. 15747.

Horizon and locality.—Dragon Paleocene, Dragon Canyon, Emery County, Utah.

Specific characters.—*Jepsenia mantiensis* is slightly larger than *Litaletes disjunctus*.

Description.—*Jepsenia mantiensis* makes the closest approach to *Litaletes disjunctus* of the various hypsodont condylarths with which comparisons have been made. The upper molar series designated as the type is only slightly more robust than in the Montana form. M^1 has about the relative proportions of that in *L. disjunctus* and shows a distinct hypocone about as in that form. However, the lingual portion of M^2 is more expanded anteroposteriorly and the hypocone in this tooth is weaker and represented only by the abrupt termination lingually of the posterior cingulum. Also, the mid-portion of the posterior cingulum on both M^1 and M^2 is not deflected upward toward the root portion of the teeth so much as in *L. disjunctus*. The cusps in the upper molars have a more nearly conical appearance, especially the protoconule and metaconule. Moreover, the protoconule and metaconule are distinctly better developed. A parastyle and mesostyle are present, more noticeable in M^2 , although the cingulum is not so extended at the anteroexternal portion of the molars. M^3 is relatively smaller than in *L. disjunctus* and the metacone, though distinct, is not so well developed, and the cingulum is less prominent and is discontinuous around the lingual and buccal surfaces of the tooth.

An M^2 with material numbered 15544 shows more acute anteroexternal and posteroexternal styles, no mesostyle, a lower protocone than in *L. disjunctus*, protoconule and metaconule relatively weak as in *L. disjunctus*, but

the hypocone is much more lingual in position and is nearly matched by a protostyle on the anterolingual portion of the tooth, with the cingulum almost but not quite continuous around the inner margin of the protocone. M¹ in this material, though lacking a mesostyle, corresponds closely to that in the type of *Jepsenia mantiensis*. It is possible that the two molars, which were found close together, belong to the same individual and may represent a form distinct from the foregoing.

TABLE 5.—MEASUREMENTS (IN MILLIMETERS) OF UPPER TEETH OF *Jepsenia mantiensis*

	M ¹	M ²	M ³
Anteroposterior diameter.....	4.5	4.4	3
Transverse diameter.....	5.4	6.4	4.6*

* Greatest transverse diameter.

Several isolated jaw fragments with single molars, one with M₂ and part of M₁, another with a well-worn M₂ and M₃, are presumed to represent *Jepsenia mantiensis*. The lower teeth in general show a distinct paraconid in a lingual position and a basined talonid with a strong hypoconid, a moderate entoconid, and a weak hypoconulid, which is the dorsal termination of a slight posterior cingulum rising from the posteroexternal portion of the tooth. The trigonid portion is not greatly different from that in *L. disjunctus*, although the entoconid on the heel is generally better developed and the small cuspule anterior to the entoconid is more distinct, however, in certain of the referred teeth there is little evidence of this accessory cusp.

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